

# SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

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**TO:** All Design Review Board Members

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**SUBJECT: Bon Air Road Bridge Replacement Project, City of Larkspur, Marin County**  
**(Second Pre-Application Review)**  
(For Board consideration on February 11, 2013)

## Project Summary

**Project Proponent:** City of Larkspur

**Proposed Replacement Bridge:** The Bon Air Road Bridge (“bridge”) at Corte Madera Creek (“creek”), a certain waterway in the Commission’s jurisdiction, is proposed for replacement.<sup>1</sup> Originally constructed in 1958, the existing bridge links Magnolia Avenue in the City of Larkspur to Sir Francis Drake Boulevard in the City of Greenbrae, and has a Class I bicycle/pedestrian lane on the north side and a five-foot-wide sidewalk on the south side. (Exhibit 1)

The proposed bridge measures 388 feet long and 62.5 feet wide (24,250 square feet). The proposed five-span precast concrete girder bridge would generally follow the existing alignment except along the north side where it would extend 13 feet beyond the existing edge. Two columns (8 to 10 feet in diameter) per bent—a total of eight columns—would be installed in the creek thereby reducing by more than half existing columns.

In each direction, the proposed bridge would accommodate: one 12-foot-wide traffic lane with a 5-foot-wide shoulder; one 5-foot, six-inch-wide bike path, and one 6-foot-wide sidewalk. (Exhibit 2) The facilities would comply with Americans with Disabilities Act standards. A 42-inch high railing with a vertical “grass reed” motif would be installed along the bridge’s outer edges. A 2-foot-wide (at the base) and 46-inch high “California ST-70” barrier with horizontal railings would separate the vehicular shoulder from the bike path. The proposed design meets aesthetic recommendations developed through City of Larkspur community meetings.

**First Design Review Board Meeting and Issues Raised.** The Commission’s McAteer-Petris Act and the Bay Plan state that maximum feasible public access consistent with the project be provided and that designs take into account, among other things, Bay views, connections with nearby roads, and sea level rise and flooding. On December 10, 2012, the Commission’s Design Review Board (“Board”) reviewed the proposed bridge and requested that the project proponent return for a subsequent review after considering and addressing the following general issues related to public access and public views of the Bay and shoreline:

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<sup>1</sup> The Commission does not have 100-foot shoreline band jurisdiction along certain waterways—the Commission’s jurisdiction at the project location.



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- **Feasibility of Water Access.** In its first review, the Board expressed concern that adequate clearance be provided beneath the bridge over time—considering future sea level rise and other flooding events—to ensure access by recreational boaters (e.g., kayaks), and asked that information be provided demonstrating clearance during existing high tide and projected sea level rise conditions.
- **Lighting.** The Board requested additional information about on-bridge lighting design, including “a photometric study”, to show whether pedestrians and cyclists would be safe (i.e., lighting would allow for facial recognition) and adjacent wildlife would be adequately protected (i.e., not impacted by illumination). Additionally, the Board encouraged the project proponent to consider fixture designs besides the proposed “acorn” style.
- **Bridge Width.** The Board asked for justification as to the proposed widths of bridge lanes and paths. The Board also requested further information justifying why the bridge appeared to extend beyond its outer edge—and thereby constitute more Bay fill. Additionally, the Board asked whether belvederes along the proposed sidewalks would be feasible.
- **Railing Transparency and Height.** The Board requested more information regarding how Bay views for bridge travelers by vehicle, foot, or bike would be impacted by the proposed railings—with a particular focus on railing height and design motif. The Board asked the project proponent to confirm whether a 54-inch outer railing height was necessary and also to provide the height of the interior traffic barrier. The Board suggested that the project proponent explore more “simple” railing designs.
- **Bicycle and Pedestrian Connections.** The Board asked that the connections of proposed bridge pathways to pedestrian and bicycle facilities located at both ends of the bridge be more clearly explained and illustrated.

**Project Proponent Response.** The project proponent responded to the Board’s comments in the following manner:

1. **Feasibility of Water Access.** According to the project proponent, at Mean Higher High Water (MHHW), vertical clearance under the existing bridge is 8.37 feet, and, under the proposed bridge, 6.78 feet. There would be a loss of 1.59 in vertical clearance between the existing bridge and the proposed bridge. Assuming a 16-inch rise in sea level by 2050, vertical clearance beneath the proposed bridge would be about 5.45 feet, a reduction of 1.33 feet over time.<sup>2</sup> For kayaks and sculls—the primary recreational boats in this area—the anticipated clearance should be adequate.

*The Board should determine whether the anticipated clearance beneath the proposed bridge would be adequate to ensure access by recreational boaters.*

2. **Lighting.** The project proponent analyzed the proposed lighting design spacing (86-feet-on-center), height (15-foot-tall poles atop 6-foot-diameter pedestals), and fixture type (acorn) for both sides of the bridge. The analysis showed that “acorn style lights...are International Dark Sky Association approved ‘Dark Sky Friendly’....[and] this type of lighting ensures 0% light above 90 degrees, thereby reducing light pollution.” Further, the proposed configuration meets national lighting criteria for pedestrian and bike paths, “assuming medium pedestrian traffic (between 11 and 100 pedestrians/cyclists per hour during peak nighttime hour).”

*The Board should determine whether the proposed lighting design would ensure safe conditions for pedestrians and cyclists, and be compatible with adjacent wildlife conditions.*

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<sup>2</sup> Elevations are feet (NAVD 88).

3. **Bridge Width.** The project proponent states that the proposed 12-foot-wide vehicle lanes meet American Association of State Highway and Transportation Officials (AASHTO) standard width for urban arterials. The 5-foot-wide shoulders (measured from the 2-foot-wide lane barrier) exceed the minimum standard of 4 feet wide. Bon Air Road Bridge is one emergency route for Marin General Hospital and the 12-foot-wide lane and 5-foot-wide shoulder would ensure maneuverability by emergency vehicles since the total vehicular width of 34 feet allows space for approximately three 11-foot-wide lanes when needed. The AASHTO standard width for Class 1 bike lanes is 5 feet, 7 inches, one inch greater than proposed pathways, which would be 5 feet, 6 inches wide. The California Department of Transportation's (Caltrans) minimum sidewalk width on bridges is 6 feet, as proposed. (Exhibit 2)

The project proponent has clarified that the bridge would protrude over the creek only where bents occur and these protrusions would support lighting fixture pedestals above. Further, belvederes were considered during the preliminary design phase, but the local community and Larkspur City Council did not support inclusion of this feature. (Exhibit 3)

*The Board should determine whether the bridge, as proposed, including all lane widths, the widening at bents to support light fixtures, and the absence of belvederes, would provide for maximum public use of the structure.*

4. **Railing Transparency and Height.** The outer "grass reed" railing has been redesigned to decrease its height from 54 inches to 42 inches, and to replace vertical tubes between railing sections with twin steel plates set four inches apart. According to the project proponent, this change "adds a little more visibility through the railing, as well as, provide[s] for a more prominent vertical post. These are more structurally and aesthetically significant, and help create a rhythm and pattern as one walks or drives across the bridge." In addition, a 46-inch-high barrier with horizontal railings would separate the vehicle lane shoulder from the bike path. (Exhibits 4 and 5) The void space (transparency) of existing and proposed bridge railings is shown in Exhibits 6 and 7.

*The Board should determine whether the proposed outer railing and interior traffic barrier would allow for maximum viewing of the Bay and shoreline by all travelers, including by vehicle, bike, foot and wheelchair, considering the features' height, specific design motif, and contrasting vertical and horizontal forms.*

5. **Bicycle and Pedestrian Connections.** The proposed bike pathways and sidewalks on the bridge would connect to bike and pedestrians pathways located at the four corners of the bridge. As shown in Exhibit 8, connecting bike and pedestrian facilities exist or are proposed for development. According to the project proponent, all proposed off-bridge improvements would be likely be implemented in coordination with bridge construction.

*The Board should determine whether the bike and pedestrian pathways on the bridge would adequately connect to facilities located off the bridge to facilitate access to the Bay and its shoreline.*